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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/598,406	06/21/2000	Gerhard Hoppen	016790/0398	6205
22428	7590	11/05/2003	EXAMINER	
FOLEY AND LARDNER SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			CHANG, AUDREY Y	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 11/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/598,406

Applicant(s)

HOPPEN, GERHARD

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20, 22 and 24-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20, 22 and 24-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☒ Interview Summary (PTO-413) Paper No(s). 23.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on August 11, 2003, which has been entered as paper number 22.
- By this amendment, the applicant has amended claims 1, 19 and 22, has canceled claim 23 and has newly added claims 25-28.
- Claims 1-20, 22, and 24-28 remain pending in this application.
- The rejections of claims under 35 USC 112, first paragraph, concerning the feature of "*single wavelength*" for the focal point to be the same, set forth in the previous Office Action dated April 10, 2003, are withdrawn in response to applicant's amendment.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claims 1-18, 19-20, 22, 24 and newly added claims 25-28 are rejected under 35 U.S.C. 112, first paragraph**, as containing subject matter which was not described in the specification in such a way as to **enable** one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification **fails** to teach how could the objective simply having *lens elements made of quartz and fluorite* (which are very common lens materials) and with a *biconcave configuration penultimate lens element*, with the radius on the object side be smaller than the radius on the image side, is capable of allowing the light having wavelength in deep ultraviolet and light having wavelength in infrared to *be focused at the same point*. The specification and the claims **fail** to teach the *essential*

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element or *critical* features that allow the feature concerning the same focal point to occur. The wavelength ranges for deep ultraviolet (in the range of 200 to 300 nm) and for infrared (above 760 nm) is very different. The lens materials have different refractive indices in the two wavelength ranges, which essentially will make the light beam with different wavelengths *to be refracted differently*. It is therefore not obvious why would the light having very different wavelengths to be focused at the same point.

Clarifications are required. Claims 2-18, 20, 23 and 25-28 inherit the rejection from their respective based claim.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 19-20, 22 and 26-27 are rejected under 35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase “IR laser autofocus system ... to *provide* the IR wavelength” recited in claim 19 is confusing, in error and indefinite since it is not clear how can an autofocus system provide a wavelength which is a number. The autofocus system is capable of *focusing* an *incident light* but it *does not* generate a light not to mention to generate a wavelength. Claim 20 inherits the rejection.

The phrase “and an IR wavelength” recited in claim 22 is vague and indefinite since it is not clear what does this phrase means. Claim 23 inherits the rejection.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1, 2, 5, 6, 17-18, 19-20, 24 and newly added claims 25, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Hayashi (PN. 5,121,255) in view of Hecht et al (Optics, Addison and Wesley 1979, pages 186-191).**

Hayashi teaches an **objective system** for *microscope* that is usable with light in *far ultraviolet* (or deep ultraviolet), *visible and infrared wavelength regions* wherein the objective lens system comprises *a plurality of lens elements made of quartz and fluorite* and with *the penultimate lens element* (23, Figure 4) having *a biconcave configuration*. Hayashi teaches explicitly that the biconcave configuration of lens made of quartz, having negative power, and the biconvex configuration of lens made of fluorite, having positive power, which makes the objective system capable of *correcting chromatic aberration* in the operable wavelength ranges, which includes the deep ultraviolet, visible and the infrared wavelength ranges, (please see Figure 4, column 6, lines 1-9). It is known in the art that *chromatic aberration* of the lens system is the main factor causing the lens system to have different focal length for light of different wavelength. The disclosure concerning the correction of chromatic aberration and the same materials used for the objective system therefore *implicitly* suggests that the same focal point for light in the deep ultraviolet and in the infrared wavelength regions can be achieved. However it would also have been obvious to one skilled in the art to apply the standard teachings of Hecht et al, particular with the formula (6.50), to design the lens system to have the same focal point for light having deep ultraviolet and infrared wavelength, for such technique is standard and quite well known in the art, and for the benefit of allowing the light having different wavelength to focus at the same point which will therefore reduce the size of the optical system using the objective system. It is a standard knowledge in the art that near infrared light has wavelength greater or equal to 760 nm and deep ultraviolet light has wavelength to be within the range of 200 to 300 nm. Although this reference does not teach explicitly that the radius of curvature for the

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biconcave penultimate element (23) at the object side is smaller than the image side, however such feature can be easily modified when calculating the lens designs to achieve the same focal points as stated above.

With regard to claim 17, near infrared light has wavelength ranges as far as 3000 nm. With regard to claim 18, although the Hayashi reference does not teach explicitly about the focal length, however by the standard knowledge of Hecht et al it would have been obvious matters of design choice to one skilled in the art to design the focal length to assume the claimed value for the benefit of providing desired focus function.

With regard to claim 19, these references do not teach explicitly to use the objective with an autofocus system. However such difference is mainly referred to how to use the objective and since infrared autofocus system is quite well known in the art such modification would have been obvious to one skilled in the art for the benefit of providing automatic focus means.

With regard to claims 25-28, the Hayashi reference also does not teach explicitly that the objective has a numerical aperture of 0.9. However numerical aperture depends on the index of refraction of the medium and the angle extend of the objective lens, such feature is therefore either inherently met by the disclosure or an obvious modification to one skilled in the art when designing the objective lens in terms of the teachings of Hecht.

Response to Arguments

7. Applicant's arguments filed on August 11, 2003 have been fully considered but they are not persuasive. The newly submitted claims have been fully considered and they are rejected for the reasons stated above.

8. The applicant is respectfully reminded that *the specification, claims and applicant's arguments have not provided or identified the essential features for making the coincidence of the focal points for the light having a wavelength in deep ultraviolet and the light having a wavelength in the infrared range*

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to occur. The facts that the two wavelengths are so different and the lens materials in general have none identical index of refraction for different wavelength ranges, which gives up different dispersion properties, make it not obvious that the focal points for light in very different wavelength ranges to be the same. If this feature, as argued by the applicant, is "well-known" or within general skill of the worker in the art according to the standard textbook teachings (such as Hecht) then such feature is not considered to novel and it holds no patentable weight since it is within general skill of the art and such design is considered to be obvious matters of design choice. If such is not the case, the applicant therefore is respectfully required to provide the "essential feature" or critical feature for achieving such coincidence.

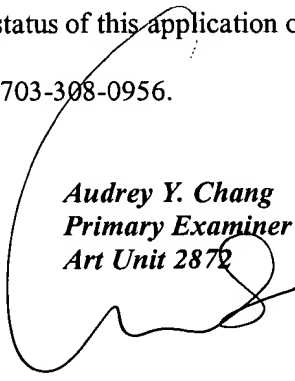
9. The applicant is also respectfully directed to the interview summary enclosed which records the interview between the examiner and applicant's attorney, Mr. Law.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
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A. Chang, Ph.D.